Algebraic Invariants. By L. E. DICKSON. New York: John Wiley and Sons. Pp. 97. $1.25 net.

This is No. 14 of the Mathematical Monographs put out by the publishers. It is divided into three parts of about equal length. Part I. treats of linear transformations from the standpoints of both analytic and projective geometry. Invariants and covariants are illustrated and defined as are also Hessians and Jacobians. The uses of the Hessian in the solution of a cubic equation and in the discussion of the points of inflection of a plane cubic curve are given. Part II. treats of the algebraic properties of invariants and covariants in non-symbolic notation. It also treats of homogeneity, weight, annihilators, seminvariant leaders of covariants, law of reciprocity, fundamental systems, properties as functions of the roots, and production as differential operators. Part III. gives an introduction to the symbolic notation of Aronhold and Clebsch. Hilbert's theorem on the expression of the forms of a set linearly in terms of a finite number of forms of the set is proved and applied to establish the finiteness of a fundamental set of covariants of a system of binary forms. There is also a discussion of transvectants and of the types of symbolic factors in any term of a concomitant of a system of forms in three or four variables.

Plane Trigonometry with Tables. By CLAUDE IRWIN PALMER and CHARLES WILBUR LEIGH. New York: McGraw-Hill Book Company. Pp. 288. $1.50 net.

It is refreshing to find now and then a text in trigonometry that defines the trigonometric functions for any angle and then specializes for the acute angle. Why anyone preparing a text for use in colleges or technical schools should want to cover the same ground practically three times instead of once is somewhat of a mystery. The ideas involved in the definitions for general angles would seem to be little if any more difficult than for acute angles and the student instead of being wearied by repetition is interested in seeing how the special cases come out of the general.

Inverse trigonometric functions and trigonometric equations are introduced early and used throughout. The problems are numerous and seem to be carefully selected. There is a chapter on complex numbers, series and hyperbolic functions. The theory and use of logarithmetic and trigonometric tables are taken up rather fully and placed in connection with the tables. The book has many advantages that will appeal to the progressive teacher.

Fergusson's Percentage Trigonometry or Plane Trigonometry Reduced to Simple Arithmetic with a Short Description of His Percentage Compass. By JOHN COLEMAN FERGUSSON. New York: Longmans. Green and Company. Pp. 155. $1.25 net.

This is a remarkable book to those who have never read it or the author's larger work. By means of a percentage unit and two rules

anyone can find the natural sine, cosine, etc., of any angle required, so that the sides and angles of a triangle may be solved by arithmetic. The percentage unit is formed as follows: Describe about a circle a square and join the points of contact, which we may take as vertical and horizontal diameters. Divide each side of the square from the point of contact to the extremities into 100 equal parts and number them in opposite directions from the middle to the ends. Then if the center of the circle is joined to each of these divisions the corresponding octants of the circumference will be divided into 100 unequal parts. Any line joining the center of the circle to any one of the octant divisions will form, together with its adjacent quadrantal line, a percentage angle and the percentage number of the angle itself will always show the ratio of the departure of that particular inclined line to the quadrantal line, from which it is numbered. The length of the quadrantal line or radius, multiplied by the central angle number, which is a decimal, will give the length of the perpendicular or tangent.

Mathematics for Agricultural Students. By Henry C. Wolff. New York: McGraw-Hill Book Company. Pp. 309. $1.50 net.

The aims of the author in writing this book are (1) to train the student to do neat and careful work, (2) to encourage further use of elementary algebra and geometry, (3) to develop the habit of careful and logical thinking, (4) to discover good methods, (5) to show how mathematics is helpful in pursuing other subjects of study. The chapter headings are: graphic representation; logarithms; circular functions; ellipse; slide rule; statics; permutations, combinations and binomial theorem; progressions; probability; small errors; point, plane and line in space; maxima and minima; empirical equations. The student who works carefully through the book will know much more mathematics in a useful form than most farmers.

Elementary Mathematical Analysis. By Charles S. Slichter. New York: McGraw-Hill Book Company. Pp. 490.

This book is intended for first-year college students and covers algebra, trigonometry and conic sections. The idea of functionality is prominent throughout and the work is developed in accordance with the twofold plan of, first, grouping the material around the three functions, $y = ax^n$, $y = a \sin mx$, $y = e^x$, and second, of enlarging the elementary functions by fundamental transformations. This in common with other volumes of the Modern Mathematical Texts published by this company shows a freshness in harmony with the trend for improved mathematical teaching.

Constructive Text-Book of Practical Mathematics. By H. W. Marsh. Vol. III., Technical Geometry. New York: John Wiley and Sons. Pp. 244. $1.25 net.

In the belief that direct contact with demonstrable truth is necessary for the development of reason the author of this book attempts to effect